

In re application of DUJAR
Serial No. 09/703,381

REMARKS

The Office action has been carefully considered. In the Office action, claims 37-52 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,230,200 to Forecast et al. ("Forecast") in view of U.S. Patent No. 6,230,200 B1 to Smith et al. ("Smith"). Applicant respectfully disagrees.

By present amendment, claims 68-72 have been added as new. Applicant submits that the claims as filed were patentable over the prior art of record, and that the amendments herein are for purposes of clarifying the claims and/or for expediting allowance of the claims and not for reasons related to patentability. Reconsideration is respectfully requested.

Prior to discussing reasons why applicant believes that the claims in this application are clearly allowable in view of the teachings of the cited and applied references, a brief description of the present invention is presented.

The present invention is directed, generally, to a system and method for enhancing file system performance by automatically balancing files among randomly-named subdirectories that have content cached therein as files with predictable filenames and by limiting the number of files in any directory. Certain file systems may experience degraded performance when more than a certain number of files are in the same directory. The balancing mechanism of the present invention operates to avoid such degraded performance. To this end, the balancing mechanism is able to track the number of files in each directory (and subsequent uniquely-associated and also randomly-named cache directory)

In re application of DUJARI
Serial No. 09/703,381

and may determine whether more directories (and subsequent cache directories) need to be created. When one or more additional directories are needed, the balancing mechanism determines how many directories to create and creates that many directories.

As new files are added, the balancing mechanism distributes the files among the various randomly-named and uniquely-associated directories, e.g., based on the directory that has the least number of files. If the number of files in the selected directory plus the number to be stored exceeds a predetermined threshold amount, then more of these directories may be created. If no more directories may be created, e.g., due to an imposed or practical limit, then files may be removed from existing directories (such as those which have not been accessed for the longest time).

Note that the above description is for general informational purposes only, and is in no way intended to limit the claims, which are discussed below.

Turning to the claims, independent claim 37 is generally directed towards generating a plurality of subdirectory names, wherein each subdirectory name is random, creating a plurality of randomly-named cache directories, one for each random subdirectory name generated, such that each randomly-named cache directory created is uniquely associated with a corresponding randomly-named subdirectory, storing a plurality of files under the plurality of randomly-named cache directories, each of the plurality of files having a predictable filename, and automatically balancing the files among each of the plurality of randomly-named cache directories.

In re application of DUJARI
Serial No. 09/703,381

The current Office action rejected claim 37 as being unpatentable over Forecast in view of Smith. More specifically, the Office action contends that Forecast teaches generating a plurality of subdirectory names, wherein each subdirectory name is random. Column 8, lines 26-30 of Forecast is referenced. Further, the Office action contends that Forecast teaches creating a plurality of randomly-named cache directories, one for each random subdirectory name generated. Column 67, lines 40-47 of Forecast is referenced. Still further, the Office action contends that Forecast teaches storing a plurality of files under the plurality of randomly-named cache directories, each of the plurality of files having a predictable filename. Column 2, lines 14-16 of Forecast is referenced. Finally, the Office action contends that Forecast teaches automatically balancing the files among each of the plurality of randomly-named cache directories. Column 67, lines 40-47 of Forecast is referenced.

The Office action concedes that Forecast does not teach creating a plurality of randomly-named cache directories, one for each random subdirectory name generated, such that each randomly-named cache directory created is uniquely associated with a corresponding randomly-named subdirectory. However, the Office action contends that Smith does teach this recitation and references column 2, lines 14-35 thereof. The Office action concludes that it would have been obvious to a person skilled in the art at the time the invention was made to combine the teachings of Forecast with the teachings of Smith to arrive at the recitations of claim 37 because optimal performance would be

In re application of DUJARI
Serial No. 09/703,381

realized by caching information in the manner suggested. Applicant respectfully disagrees.

To establish *prima facie* obviousness of a claimed invention, all of the recited claim limitations must be taught or suggested by the prior art; (*In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)), and "all words in a claim must be considered in judging the patentability of that claim against the prior art;" (*In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)). Further, if prior art, in any material respect teaches away from the claimed invention, the art cannot be used to support an obviousness rejection. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed Cir. 1997). Moreover, if a modification would render a reference unsatisfactory for its intended purpose, the suggested modification / combination is impermissible. See MPEP § 2143.01.

Applicant submits that the Office action has failed to establish a *prima facie* case for obviousness. All of the recited claim limitations of claim 37 have not been shown to be taught by the prior art of record. Significantly, the Office action admits that Forecast does not teach the recitation (or even the concept) of creating a plurality of randomly-named cache directories, one for each random subdirectory name generated, such that each randomly-named cache directory created is uniquely associated with a corresponding randomly-named subdirectory. As is detailed below, Smith does not cure this deficiency.

Smith is directed, generally, to a method for accessing and updating information stored in a library of information. In specific, the section cited by the Office action describes a method that includes using a cataloguing step having a

**In re application of DUJARI
Serial No. 09/703,381**

unique contents-based value for each of the catalogued discs, such that the unique value is produced by iteratively reading data from a target disc. With this protocol in place, data streams may be transmitted that include all information to be transferred including subdirectory structures, directory names, variable file lengths and the like.

However, the Office action has erroneously interpreted this section of Smith. In Smith, it is the value assigned to each disc that is the unique contents-based subject matter. Thus, unique values are associated with discs that may contain data in directories and subdirectories, and when this information is needed, it is transferred based upon an identification system that uses a unique value per disc for identification and data streaming. This is quite different from creating a plurality of randomly-named cache directories, one for each random subdirectory name generated, such that each randomly-named cache directory created is uniquely associated with a corresponding randomly-named subdirectory as recited in claim 37.

In fact, no prior art of record teaches the recitation of creating a plurality of randomly-named cache directories, one for each random subdirectory name generated, such that each randomly-named cache directory created is uniquely associated with a corresponding randomly-named subdirectory. The Office action contends that one portion of this recited claim limitation is taught by Forecast, yet acknowledges that another portion of this recitation is not taught by Forecast. A recited claim limitation must be read in context, in view of the claim language that is part of the limitation and the claim language that surrounds it, as

In re application of DUJARI
Serial No. 09/703,381

it is impermissible to read various parts of a limitation in isolation independent from other language.

Clearly, the Office action cannot construe the recitation of "creating a plurality of randomly-named cache directories, one for each random subdirectory name generated, such that each randomly-named cache directory created is uniquely associated with a corresponding randomly-named subdirectory" as if it were two distinct parts. The claim language is intended to be read as a whole. Therefore, Forecast does not teach this recitation as a whole and Smith does not cure this deficiency. If even one claim limitation is not taught by any prior art of record, then a *prima facie* case for obviousness cannot be maintained.

Furthermore, applicant submits that the Forecast teaches away from the present invention. As has been set forth before, Forecast teaches, generally, a system and method for allocating component resources when streaming data from a video file server. More particularly, Forecast describes creating a dynamic model of the configuration of components for data handling in the video file server and allocating the components for routing a video stream. The model includes assemblies and subassemblies in the video file server. The major sub-assemblies include a stream server, a cached disk array and a tape silo. Within these major sub-assemblies, the cached disk array includes micro-processor cards that are programmed to function as channel directors or disk directors. Each of the channel directors is interfaced through one of a number of SCSI adaptors to the SCSI interface of one of the stream servers. With this architecture in place, the channel directors access data in the cache memory in

In re application of DUJAR
Serial No. 09/703,381

response to a request from its associated stream server. If data to be read by a channel director are not found in cache memory, the data are transferred from the disk array to the cache memory. Thus, a controller at the file server is configured to automatically create the dynamic model, modify the dynamic model in response to component changes such as component failures, and allocate component resources for routing the video stream and balance allocations of component resources to video streams.

The allocation balancing program described in Forecast may free resources of a heavily loaded cached disk array including a file system containing a video stream for which a copy is stored in the file system in another cached disk array. In this case, the path of the existing stream of data from the heavily loaded cached disk array would be dynamically changed to originate from the copy of the video stream in the other file server in order to free resources of the heavily loaded cached disk array. That is, Forecast teaches balancing of data streams via components available in a video file server.

Significantly, Forecast does not describe balancing files among directories, let alone balancing among cache directories that have a specific relationship to a randomly named sub-directory, as recited in claim 37. Nor does Forecast describe distributing new files that are added among the various directories, as described in other dependent claims. Rather, Forecast merely describes allocating components in a video file server for streaming video data. Automatically allocating components in a video file server for streaming video data according to a predetermined balanced routing configuration is not the same

In re application of DUJARI
Serial No. 09/703,381

as automatically balancing files among each of a plurality of randomly-named cache directories, each of which are associated with a unique randomly-named subdirectory. Not even by analogy does such an enormous leap in logic reach the claims of the present invention.

Further, in describing the components of the video file server, Forecast describes two physical file systems: a conventional UNIX File System and a Continuous Media File System (CMFS). The CMFS file system that is used for storing the video data streams may span several disks within a CMFS volume set. When a new CMFS file is created, it is written in a "stripe" across all the disks within the volume set. Forecast specifically states that "[t]he reason for multi-disk volume sets is to increase capacity rather than provide load balancing" (emphasis added). Forecast then further explains that *load balancing for video streams may be accomplished by exporting multiple file systems*. (See Col 11:9-15, emphasis added). Thus, Forecast admits that load balancing must necessarily be achieved by a system outside the scope of what is described in Forecast. Simply stating that load balancing *may* be accomplished is certainly not the same as teaching how to accomplish load balancing within the confines of Forecast's described system. This is another unreasonable stretch of logic, and appears to be nothing more than an overly broad, conclusory allegation based solely on applicant's teachings. Such broad, conclusory statements do not come close to adequately addressing the issue of motivation to combine, are not evidence of obviousness, and therefore are improper as a matter of law. *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

In re application of DUJARI
Serial No. 09/703,381

Thus, applicant still maintains that Forecast teaches away from applicant's invention. Forecast's technique optimizes reading video content and does not load balance files among directories. Forecast also teaches away from applicant's invention by allocating across all disks within a volume set to increase capacity and suggests that load balancing of video content may be accomplished by exporting multiple file systems. For at least the foregoing reasons, applicant submits that claim 37 is allowable over the prior art of record.

Applicant respectfully submits that dependent claims 38-52, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 37 and consequently includes the limitations of independent claim 37. As discussed above, Forecast and Smith, whether considered individually or in any permissible combination at law, fail to teach or suggest the recitations of claim 37 and therefore these claims are also allowable over the prior art of record. In addition to the recitations of claim 37 noted above, each of these dependent claims includes additional patentable elements.

For example, claim 40 generally recites that automatically balancing files among each of the plurality of randomly-named cache directories includes determining when a randomly-named cache directory has a number of files stored therein that exceeds a limit. As discussed above, neither Forecast nor Smith teaches automatically balancing files among each of the plurality of randomly-named cache directories. Thus, Forecast cannot possibly be construed to teach determining when a randomly-named cache directory has a number of files stored therein that exceeds a limit, as plainly recited in claim 40.

**In re application of DUJARI
Serial No. 09/703,381**

The only limits taught by Forecast regarding the allocation of a video stream file is the capacity of a particular resource. A particular resource in Forecast may be limited by a number of factors, including load demand, processor speed, etc., but certainly there is no teaching or suggestion regarding the actual number of files that may be associated with the particular resource. Applicant submits that claim 40 is allowable for at least this additional reason.

As another example, claim 47 recites maintaining an index including a directory name for each of the plurality of randomly-named cache directories, and for each directory name, maintaining a file count of a number of files stored therein. As discussed above, neither Forecast nor Smith teaches dealing with files among each of a plurality of randomly-named cache directories. Thus, Forecast cannot possibly be construed to teach maintaining a file count of a number of files stored therein. The only limitations taught by Forecast regarding the allocation of a video stream file is the capacity of a particular resource. A particular resource may be limited by a number of factors including load demand, processor speed, etc. but is certainly concerned with the actual number of files that may be associated with the particular resource. Applicant submits that claim 47 is allowable for at least this additional reason.

Newly added claims 68-72 are directed to a computer-readable medium having computer-executable instructions that embody the method of claim 37. Applicant submits that claims 68-72 are allowable over the prior art of record for at least the same reasons as detailed above with respect to claim 37.

**In re application of DUJARI
Serial No. 09/703,381**

Applicant submits that all the claims are patentable over the prior art of record for at least the foregoing reasons. Reconsideration and withdrawal of the rejections in the Office action is respectfully requested and timely allowance of this application is earnestly solicited.

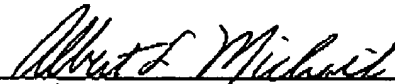
In re application of DUJAR
Serial No. 09/703,381

CONCLUSION

In view of the foregoing remarks, it is respectfully submitted that claims 37-52 and 68-72 are patentable over the prior art of record, and that the application is in good and proper form for allowance. A favorable action on the part of the Examiner is earnestly solicited.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney at (425) 836-3030.

Respectfully submitted,



Albert S. Michalik, Reg. No. 37,395
Attorney for Applicant
Law Offices of Albert S. Michalik, PLLC
704 - 228th Avenue NE, Suite 193
Sammamish, WA 98074
(425) 836-3030
(425) 836-8957 (facsimile)

In re application of DUJAR!
Serial No. 09/703,381

CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this Amendment, along with transmittal, petition for extension of time, credit card payment form and facsimile cover sheet, are being transmitted by facsimile to the United States Patent and Trademark Office in accordance with 37 C.F.R. 1.6(d) on the date shown below:

Date: January 20, 2006



Albert S. Michalik

1411 Fifth Amendment